

ABSTRACT OF THE DISCLOSURE

5 A method of making a heterojunction bipolar transistor comprises the steps of: forming a mask layer on a compound semiconductor film by using a photomask for forming an emitter; and forming the emitter by wet-etching the compound semiconductor film by using the mask layer. The photomask has a pattern thereon for forming the emitter. The pattern is defined by a first area R associated with the shape of the emitter to be formed, and a plurality of second areas T_1 to T_4 . Each of the second areas T_1 to T_4 includes first and second sides S_1 and S_2 meeting each other to form an acute angle therebetween, and a third side S_3 in contact with the first area R. In each of the second areas T_1 to T_4 , one side S_3 of the two sides meeting each other to form a right angle therebetween is in contact with one side of the area R, whereas the other side S_1 is connected to another side of the first area R to form a line segment. Using this photomask, an etching mask is arranged such that a side S_{11} of the first area R is oriented in $\{011\}$ direction of the emitter crystal film. When the emitter crystal film is etched by use of the etching mask, a rectangular emitter is obtained.